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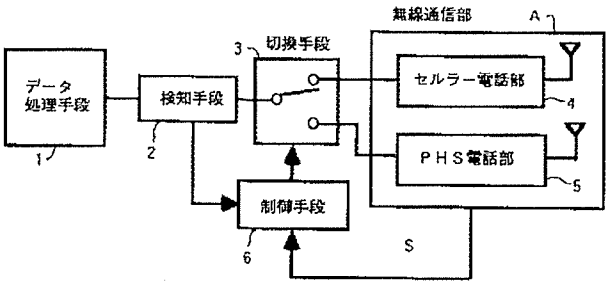
(54)【発明の名称】　携帯用情報端末装置

(57)【要約】

【課題】複数の無線通信手段を併せ持つ携帯用情報端末装置において、従来においてはいずれの無線通信手段を利用するかは利用者の判断に依存していたため、利用者に通信機能の選択操作が強いられていた。

【解決手段】複数の無線通信手段と、各々異なる処理を実行する複数のアプリケーションソフトウェアを実行するデータ処理手段と、データ処理手段で実行されたアプリケーションソフトウェアを検知して無線通信手段ごとの優先度情報を発生する。制御手段は複数の無線通信手段の通信可否情報と優先度情報とに応じて切換信号を発生し、これにより複数の無線通信手段から一つを動作可能にする。実行されるアプリケーションの特徴情報、無線通信機能の特徴情報、通信料金に関する情報から自動的に無線通信機能を切替えることができる。



【特許請求の範囲】
【請求項１】複数の無線通信手段を有し、料金および／または前記無線通信手段を利用して送受信する内容に基づいて決定される優先度により前記複数の無線通信手段のいずれかを選択的に利用可能にする携帯用情報端末装置。
【請求項２】複数の無線通信手段と、各々異なる処理を実行する複数のアプリケーションソフトウェアを実行するデータ処理手段と、データ処理手段から受信した情報に基づき実行されたアプリケーションソフトウェアを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記検知手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えた携帯用情報端末装置。
【請求項３】複数の無線通信手段と、使用者に実行するアプリケーションソフトウェアの選択指定を可能とし、前記複数の無線通信手段の優先度情報を発生する選択指定手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記選択指定手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えた携帯用情報端末装置。
【請求項４】複数の無線通信手段と、データの入力のためのインターフェイス手段と、前記インターフェイス手段を介して入力されたデータを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記検知手段の出力と前記通信可否情報に応じて切換信号を与える制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えた携帯用情報端末装置。
【請求項５】複数の無線通信手段と、各々異なる処理を実行する複数のアプリケーションソフトウェアを実行するデータ処理手段と、データ処理手段から受信した情報に基づき実行されたアプリケーションソフトウェアを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、現在位置を示す情報を発生する検出手段と、発信地域と着信地域に対応付けた無線通信手段ごとの料金に関する情報が記憶された記憶手段と、前記検出手段の出力と発信番号を基に前記記憶手段から料金優先度を取得し、得られた料金優先度と前記検知手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通
【請求項６】複数の無線通信手段と、使用者に実行するアプリケーションソフトウェアの選択指定を可能とし、前記複数の無線通信手段の優先度情報を発生する選択指定手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、現在位置を示す情報を発生する検出手段と、発信地域と着信地域に対応付けた無線通信手段ごとの料金に関する情報が記憶された記憶手段と、前記検出手段の出力と発信番号を基に前記記憶手段から料金優先度を取得し、得られた料金優先度と前記検知手段の出力と前記通信可否情報に応じて切換信号を与える制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えた携帯用情報端末装置。
【請求項７】複数の無線通信手段と、データの入出力のためのインターフェイス手段と、前記インターフェイス手段を介して入力されたデータを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、現在位置を示す情報を発生する検出手段と、発信地域と着信地域に対応付けた無線通信手段ごとの料金に関する情報が記憶された記憶手段と、前記検出手段の出力と発信番号を基に前記記憶手段から料金優先度を取得し、得られた料金優先度と前記検知手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えた携帯用情報端末装置。
【請求項８】検知手段はインターフェイス手段を介して入力されたデータとは別の種別情報を検知して複数の無線通信手段の優先度情報を発生することを特徴とする請求項４または請求項７に記載の携帯用情報端末装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、携帯用情報端末装置に関する。
【０００２】
【従来の技術】近年、セルラー電話やＰＨＳ（パーソナル・ハンディホン・システム）等の各種の移動電話が普及している。そこで、ページャ等も含めた複数の通信機能を併せ持つ多モードの通信端末装置が考えられているが、これらの通信端末装置は、所望の通信機能へ切換えるためにボタン操作が必要なので使用者に煩わしさを与えるいといった問題点があった。これを解決するために、コードレス電話とセルラー電話の両機能を持つ端末装置で、初期状態でコードレス電話の機能を動作させ、親機と交信できた場合はそのままコードレス電話を機能させるが、交信できなかった場合には、自動的にセルラー電話の機能に切換えて動作させるように利便性を向上

【０００３】
【発明が解決しようとする課題】セルラー電話は、高速移動中でも通信が可能で、サービス地域が広いといったメリットを有しているが、利用料金が高いというデメリットもある。一方、ＰＨＳは、利用料金が安く、データの高速伝送が可能で将来のマルチメディア通信に向いているというメリットがあるが、車中等での高速移動中は利用できないこと、サービス地域が現在では狭いなどのデメリットもある。このように、現在様々な移動電話が普及しているが、それらの機能や性能にはそれぞれ独自の特徴がある。
【０００４】しかし、上述の従来技術では各種の電話サービスが有する独自の特徴を生かした切換を容易に行うことはできず、これらの切換えを行うには使用者自らの判断を必要とするものであった。本発明は係る問題点を解決すべくなされたものであり、使用者が利用するアプリケーションソフトウエアに最適な電話システムを自動的に選択することができる。電話システムやアプリケーションソフトウェアの知識に乏しい使用者でも格別な操作を必要とせず、しかも通信費の削減を図ることを目的としたものである。
【０００５】
【課題を解決するための手段】本発明の携帯用情報端末装置は上述の問題点を解決するために、複数の無線通信手段を有し、料金および／または前記無線通信手段を利用して送受信する内容に基づいて優先度を決定し、この優先度により前記複数の無線通信手段のいずれかを利用可能にすることを特徴とするものである。
【０００６】また、複数の無線通信手段と、各々異なる処理を実行する複数のアプリケーションソフトウェアを実行するデータ処理手段と、データ処理手段から受信した情報に基づき実行されたアプリケーションソフトウェアを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記検知手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えたことを特徴とするものである。
【０００７】また、複数の無線通信手段と、使用者に実行するアプリケーションソフトウェアの選択指定を可能とし、前記複数の無線通信手段の優先度情報を発生する選択指定手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記選択指定手段の出力と前記通信可否情報に応じて切換信号を出力する制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えたことを特徴とするものである。
【０００８】また、複数の無線通信手段と、インターフェイス手段を介して入力されたデータを検知して前記複数の無線通信手段の優先度情報を発生する検知手段と、前記複数の無線通信手段の通信可否情報を発生する手段と、前記検知手段の出力と前記通信可否情報に応じて切換信号を与える制御手段と、前記制御手段の出力に応じて前記複数の無線通信手段から一つの無線通信手段を動作可能にする切換手段とを備えたことを特徴とするものである。
【０００９】これらの発明にさらに現在位置を示す情報を発生する検出手段と、発信地域と着信地域に対応付けた無線通信手段ごとの料金に関する情報が記憶された記憶手段とを設け、制御手段は検出手段の出力と発信番号を基に前記記憶手段から料金優先度を取得し、得られた料金優先度と前記検知手段若しくは選択指定手段の出力と前記通信可否情報に応じて切換信号を出力することを特徴としたものである。
【００１０】さらに、検知手段はインターフェイス手段を介して入力されたデータとは別の種別情報を検知して複数の無線通信手段の優先度情報を発生することを特徴とするものである。
【００１１】
【発明の実施の形態】図１は本発明に係る携帯用情報端末装置を示すブロック図である。無線通信部Ａは、セルラー電話部４とＰＨＳ電話部５からなる。セルラー電話部４はセルラー電話の通信機能を有し、ＰＨＳ電話部５はＰＨＳ電話の通信機能を有する。データ処理手段１は、音声通話、パソコン通信、ファイル転送、テレビ電話、インターネットへのアクセス等の処理を実行するためのアプリケーションソフトウェアが記憶されおり、それらのアプリケーションを実行してデータを出力することができる。
【００１２】検知手段２は、データ処理手段の出力が入力され、データ処理手段で実行されたどのアプリケーションソフトウェアの出力データであるかを検知する。例えば、入力データを分析して音声情報と判断できる場合には、実行されたアプリケーションソフトウェアが音声通話であることを検知できる。さらに検知手段２は、アプリケーションソフトウェアに対応したセルラー電話機能及びＰＨＳ電話機能ごとの優先度を付したテーブルを備えており、データ処理手段１で実行されたアプリケーションソフトウェアに対応する優先度情報をこのテーブルより得るようになされている。例えばファイル転送をする場合にはファイル転送の伝送速度は高速でも低速でも可能であるが、高速伝送を利用すれば通信時間が短くなり、通信費用も安く済むので、高速伝送が可能なＰＨＳ電話機能の優先度が１番高く設定され、セルラー電話機能の優先度は次の順位に設定される。また、マルチメディア通信でＩＳＤＮにしか接続できないものである場

【００１３】制御手段６には、検知手段２の出力である優先度情報と無線通信部Ａからセルラー電話４及びＰＨＳ電話部５が通信可能か否かを示す信号Ｓとが供給される。制御手段６は、優先度情報と信号Ｓを基にセルラー電話部とＰＨＳ電話部のうち優先度が高く通信可能な電話部を選択し、切換信号を出力する。切換手段３は制御手段６からの切換信号に応じて切換制御される。この結果、実行されたアプリケーションソフトウェアで処理されたデータが選択的にセルラー電話部４若しくはＰＨＳ電話部５に供給される。

【００１４】図２は、使用者が実行するアプリケーションソフトウェアを選択指定する場合の実施例を示す。使用者は選択指定手段７に実行するアプリケーションソフトウェアを直接入力することにより選択指定をすることができ、例えばペン等のポインティングデバイスで実行するアプリケーションソフトウェアを選択することにより行うことができる。選択指定手段７は、アプリケーションソフトウェアに対応したセルラー電話機能及びＰＨＳ電話機能ごとの優先度を付したテーブルを備えており、選択指定されたアプリケーションソフトウェアに対応する優先度情報をこのテーブルより得るようになされている。選択指定手段７は、このようにして得られた優先度情報を制御手段６に供給する。また、データ処理手段１の出力は切換手段３に直接供給される。

【００１５】図３及び図４は、本発明に係る携帯用情報端末装置をパーソナルコンピュータ等に接続した場合の場合の実施例を示す。接続を可能とするためにインターフェース８を設けある。図３はパーソナルコンピュータの出力データがインターフェース手段８に供給される場合で、入力データから実行されたアプリケーションソフトウェアを判別するようにしたものである。例えば、入力データを分析して音声情報と判断できる場合には、実行されたアプリケーションソフトウェアが音声通話であることを検知できる。検知手段２は、この種別情報を基に音声通話のアプリケーションソフトウェアに対応した電話機能ごとの優先度を出力する。制御手段６は、優先度情報と信号Ｓを基にセルラー電話部とＰＨＳ電話のうち優先度が高く通信可能な電話部を選択し、切換信号を出力する。

【００１６】図４ではパーソナルコンピュータ等からの出力としてデータと種別情報がインターフェース手段８に供給される場合である。この種別情報は実行されたアプリケーションソフトウェアが何であるかを示すものであり、インターフェース手段８に供給されるデータとは別個に供給される場合の他、供給されるデータと共に供給される場合も含まれる。共に供給される場合とは、例えば供給されるデータがヘッダー部を有する場合のヘッダー部に種別情報が含まれている場合である。検知手段はソフトウェアに対応した電話機能ごとの優先度情報を出力する。制御手段６は、優先度情報と信号Ｓを基にセルラー電話部とＰＨＳ電話のうち優先度が高く通信可能な電話部を選択し、切換手段３に切換信号を出力する。

【００１７】ここで、実行されるアプリケーションソフトウェアによっては、ＰＨＳ電話部とセルラー電話部のいずれでも良い場合があり、この場合両方の無線通信手段の優先度は同じとなる。例えば、実行されるアプリケーションが音声通話である場合には、ＰＨＳ電話部でもセルラー電話部のいずれでも良いので、同じ優先度が設定されていることになる。この場合には、携帯用情報端末装置の現在の位置情報を検出するとともに、発信番号から着信相手の位置情報を検知し、携帯用情報端末装置の現在位置情報と着信相手の位置情報とを基に、予め登録された料金に関する情報のテーブルを検索し、通信料金の比較を行う。そして、通話料金の安いものから優先して順位を決定することができる。

【００１８】図５は、この通話料金の大小によるセルラー電話部４とＰＨＳ電話部５の切換を可能とした実施例を示すブロック図である。検出手段９は携帯端末装置の現在位置を検出する手段である。現在位置の検出は、公開特許公報（特開平６－１２０８７６）に開示されているように、携帯用情報端末装置で無線基地局が指向性を変化させながら送信する基地局識別情報及び指向性情報を含むバースト信号を受信し、受信電界強度情報を基に携帯用情報端末装置の位置を検出する。また、４個以上の衛星から送信される電波を受信して、携帯用情報端末装置の位置を測定するＧＳＰ（Global Positioning System：グローバル　ポジショニング　システム）により検出してもよい。発信番号は、使用者が無線通信部のダイヤルボタンを押下することにより得られるのでこれを制御手段６に供給する。またはデータ処理手段１に発信番号が含まれている場合は検知手段２にてこれを検知して制御手段６に供給するようにしてもよい。この場合、送信データとは別に電話番号を識別できるヘッダー部をデータ処理手段が出力するようにすれば、検知手段はこのヘッダー部を認識することで発信番号を認識することができる。

【００１９】記憶手段１０はＰＨＳ電話またはセルラー電話それぞれの発信エリアから着信エリア別の通信料金のテーブルを記憶しておくものである。この通信料金のテーブルは出荷時にＲＯＭに記憶しておき、将来料金が改定された場合にこのＲＯＭを交換するだけで対応できるようにしておく。また、料金に関する情報が通信事業者から基地局を介して配信される場合には、携帯情報端末装置に書き換え可能なメモリを設け、この情報を記憶するようにすることもできる。さらにＩＣカードなどの記憶媒体を利用することもできる。制御手段６は、検知

段Ａの最適な電話部を選択し、切換手段３に切換信号を出力する。最適な電話部の選択については図６に基づいて後述する。

【００２０】ここで通話料金の優先度は、検出手段９で検出された携帯用情報端末装置の現在位置から発信エリアを判断し、発信番号から着信エリアを判断し、記憶手段１０に記憶された通信料金のテーブルから電話機能ごとの通信料金の比較を行うことで決定される。

【００２１】図６は本発明の切換処理の概要を示すフロー図である。実行されたアプリケーションソフトウエアが何であるかが検知手段２で検知される（Ｓ２００）。検知されたアプリケーションソフトウェアに対応する優先度が、図７に示すアプリケーションソフトウェアと電話機能とのテーブルから取得される（Ｓ２０１）。例えばアプリケーションとして音声通話が検知された場合には、図７の音声通話の行７０２でセルラー電話機能の列７１０の欄の優先度「１」が取得される。これにより音声通話のアプリケーションでセルラー電話機能を選択する場合の優先度が「１」であることが分かる。同様にしてＰＨＳ電話機能を選択する場合の優先度「１」（７０２行、７１２列）が取得されることになる。

【００２２】次に、セルラー電話機能とＰＨＳ電話機能の優先度の比較が行われる（Ｓ２０２）。例えば実行されたアプリケーションソフトウェアとしてファイル転送が検知された場合のセルラー電話機能の優先度は図７より「２」、同様にＰＨＳ電話機能の優先度は「１」となり、ＰＨＳ電話機能の方が優先度が高いこととなる。また、実行されたアプリケーションソフトウェアとして音声通話が検知された場合には、セルラー電話機能の優先度は「１」でＰＨＳ電話機能の優先度は「１」となり、優先度が同じことになる。

【００２３】セルラー電話機能の優先度とＰＨＳ電話機能の優先度が同じ場合には、各通信手段ごとの料金が比較される（Ｓ２０３）。料金比較は、携帯用情報端末装置の現在の位置情報を基地局から受信したどのセルの基地局であるかを示す情報から検知し、発信電話番号から着信相手の位置情報を検知し、携帯用端末装置の現在位置情報と着信相手の位置情報とを基に予め登録された図８に示すテーブルから通信料金の比較を行う。例えば、着信相手の電話番号が「セルラー電話」である場合には、図８から発信地域に関係なく着信「セルラー電話」の行８００が選択され、セルラー電話機能の料金「Ｘ１」（行８００と列８１０の欄）及び、ＰＨＳ電話機能の料金「Ｙ１」（行８００と列８１１の欄）を取得する。また、発信する携帯用情報端末装置の現在位置が「０６」エリアで、着信相手の電話番号が「０６」エリアの場合には、図８の発信「０６」及び着信「０６」の行８０１が選択され、セルラー電話機能の料金「Ｘ２」して、「Ｘ２」と「Ｙ２」の比較がなされ、「Ｘ２＞Ｙ２」であればＰＨＳ電話機能が選択され、「Ｘ２＜Ｙ２」であればセルラー電話機能が選択される。

【００２４】ＰＨＳ電話機能の優先度がセルラー電話機能の優先度より高い場合、または優先度が同じで上述の料金比較の結果ＰＨＳ電話機能が選択される場合には、ＰＨＳ電話部５が通信可能か否かの判断がなされる（Ｓ２０４）。ＰＨＳ電話部５の通信可否の判断は、無線通信部Ａから取得される信号Ｓによりなされる。その結果通信可能であればＰＨＳ電話部５に切換えが行われ（Ｓ２０６）、通信不能と判断された場合はセルラー電話部４の通話可能の可否の判断がなされる。セルラー電話部４の通信可能の可否判断は、実行されたアプリケーションソフトウェアがセルラー電話機能による通信に適しているか否かの判断と、セルラー電話部による通信が可能か否かの判断がなされる（Ｓ２０７）。例えば実行されたアプリケーションとしてＩＳＤＮを使用するものが検知された場合のセルラー電話機能の優先度は、図７より「０」（７０５行，７１０列）となり通信不能を表している。この場合はセルラー電話部への切換は行わず切替え処理を終了する（Ｓ２０９）。一方、セルラー電話部５の通話が可能と判断された場合、即ち優先度が「１」または「２」で、かつ、セルラー電話部４から通知される基地局との通信が可能か否かの信号Ｓが可能である場合には、セルラー電話部５に切換えが行われる（Ｓ２０８）。

【００２５】セルラー電話機能の優先度がＰＨＳ電話機能の優先度より高い場合、または優先度が同じで上述の料金比較の結果セルラー電話機能が選択される場合には、セルラー電話部４が通信可能か否か判断される（Ｓ２０５）。セルラー電話部４の通信可否の判断は、無線通信部Ａから取得される信号Ｓによりなされる。その結果通信可能であればセルラー電話部４に切換えが行われ（Ｓ２１０）、通信不能と判断された場合はＰＨＳ電話部５の通話可能の可否の判断がなされる。ＰＨＳ電話部５の通信可能の可否判断は、実行されたアプリケーションソフトウェアがＰＨＳ電話機能による通信に適しているか否かの判断と、ＰＨＳ電話部５による通信が可能か否かの判断によりなされる（Ｓ２１１）。実行されたアプリケーションソフトウェアがＰＨＳ電話機能による通信に適しており、かつ、通信が可能である場合にはＰＨＳ電話部５に切換えが行われ（Ｓ２１２）、そうでない場合にはＰＨＳ電話部５に切換えを行わず処理を終了する（Ｓ２０９）。尚、実施例では、セルラー電話機能とＰＨＳ電話機能について説明したが、本発明はこれらに限定されるものではない。

【００２６】

【発明の効果】本発明においては、利用するアプリケー

作が容易となり利便性の向上、通信料金の削減を図ることができる。また、利用するアプリケーションソフトウェアによって選択されるべき電話機能を自動的に切換えるものであるから電話機能の通信条件の知識に乏しい者でも利用するアプリケーションソフトウェアに適した通信手段で通信することができる効果を有する。さらに、料金に関する情報に基づきより通信費用の安い電話部に自動的に切換えるものであるから通信費用の削減に効果がある。

【図面の簡単な説明】

【図１】本発明に係わる機能ブロック図

【図２】本発明に係わる他の機能ブロック図

【図３】本発明に係わる他の機能ブロック図

【図４】本発明に係わる他の機能ブロック図

【図５】本発明に係わる他の機能ブロック図

【図６】本発明の実施例における処理を示すフローチャート図

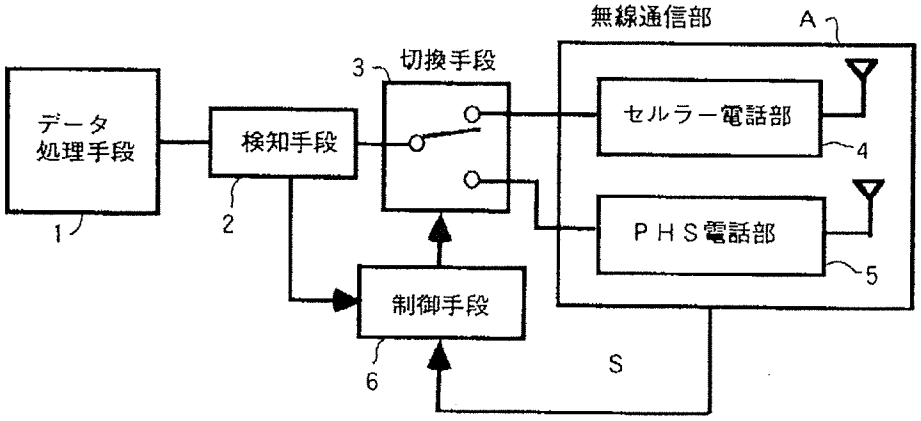
【図７】本発明の実施例におけるアプリケーションソフトウェアと優先度の対応を示す図

【図８】本発明の実施例における電話機能別の料金を示す図

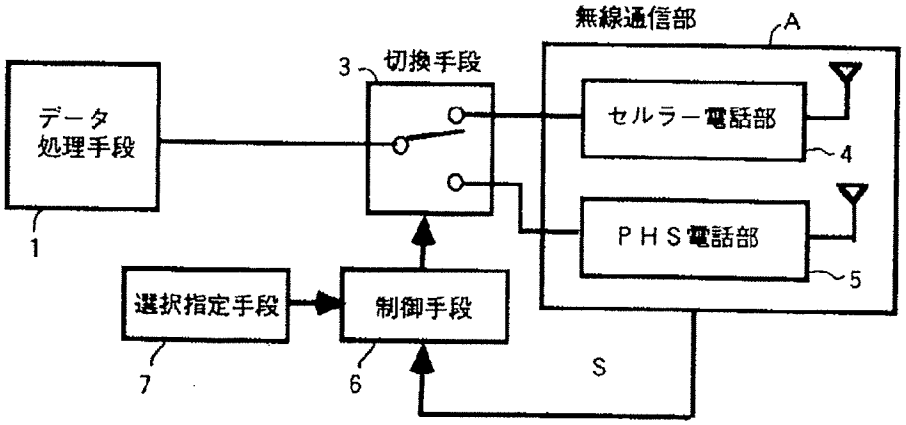
【符号の説明】

１　アプリケーション手段
２　検知手段
３　切換手段
４　セルラー電話部
５　ＰＨＳ電話部
６　制御手段
７　選択指定手段
８　インターフェイス
９　検出手段
１０　記憶手段

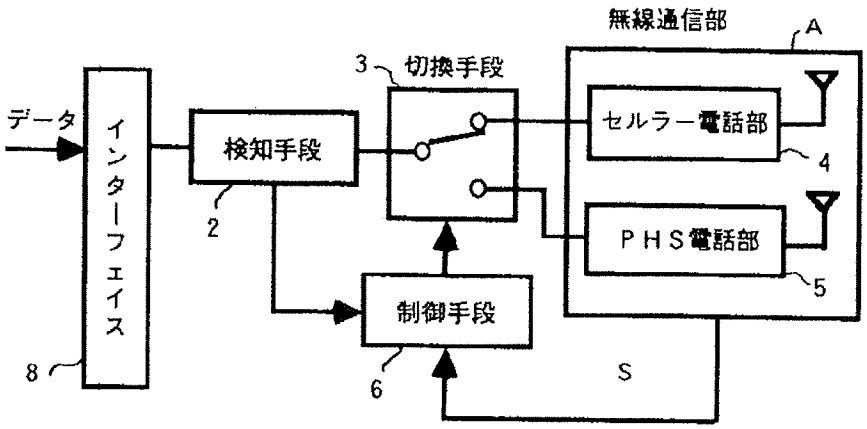
【図１】



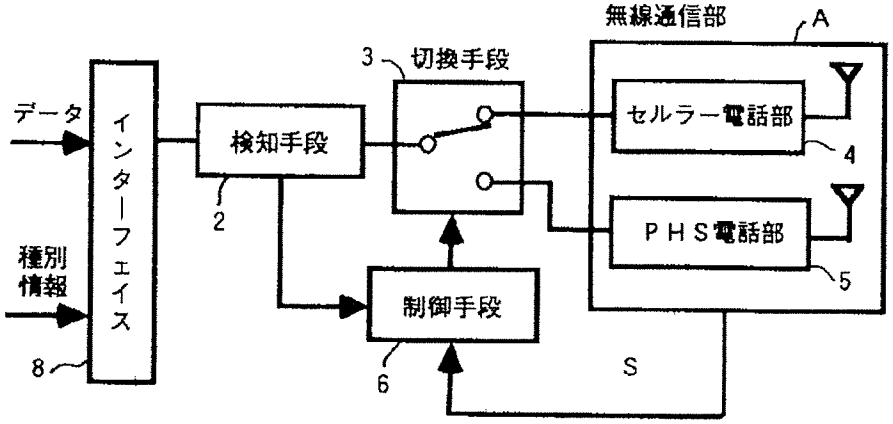
【図２】



【図３】



【図４】



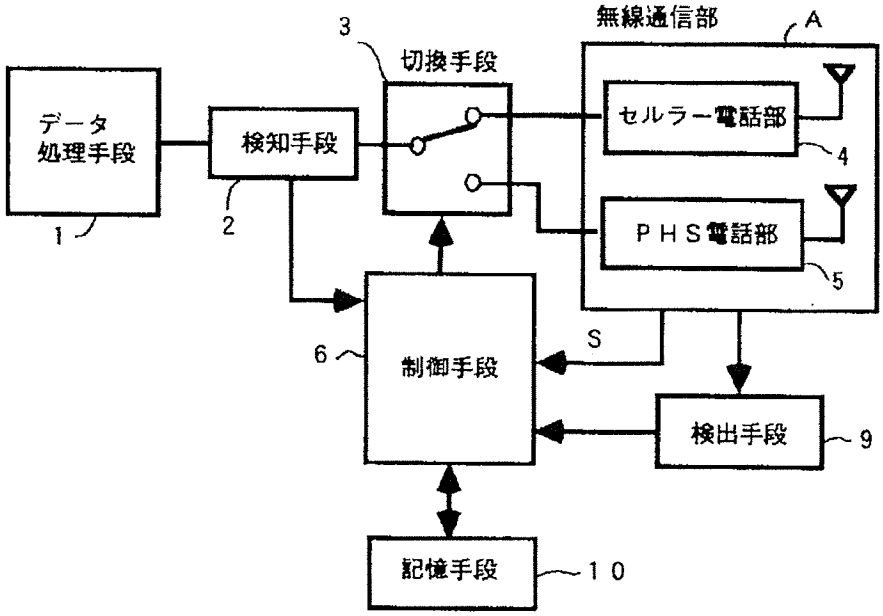
【図７】

		710	712
	アプリケーションソフトウェア	セルラー電話機能	PHS電話機能
701	ファイル転送	2	1
702	音声通話	1	1
703	パソコン通信	1	1
704	インターネットアクセス	2	1
705	マルチメディア通信（ISDN使用）	0	1

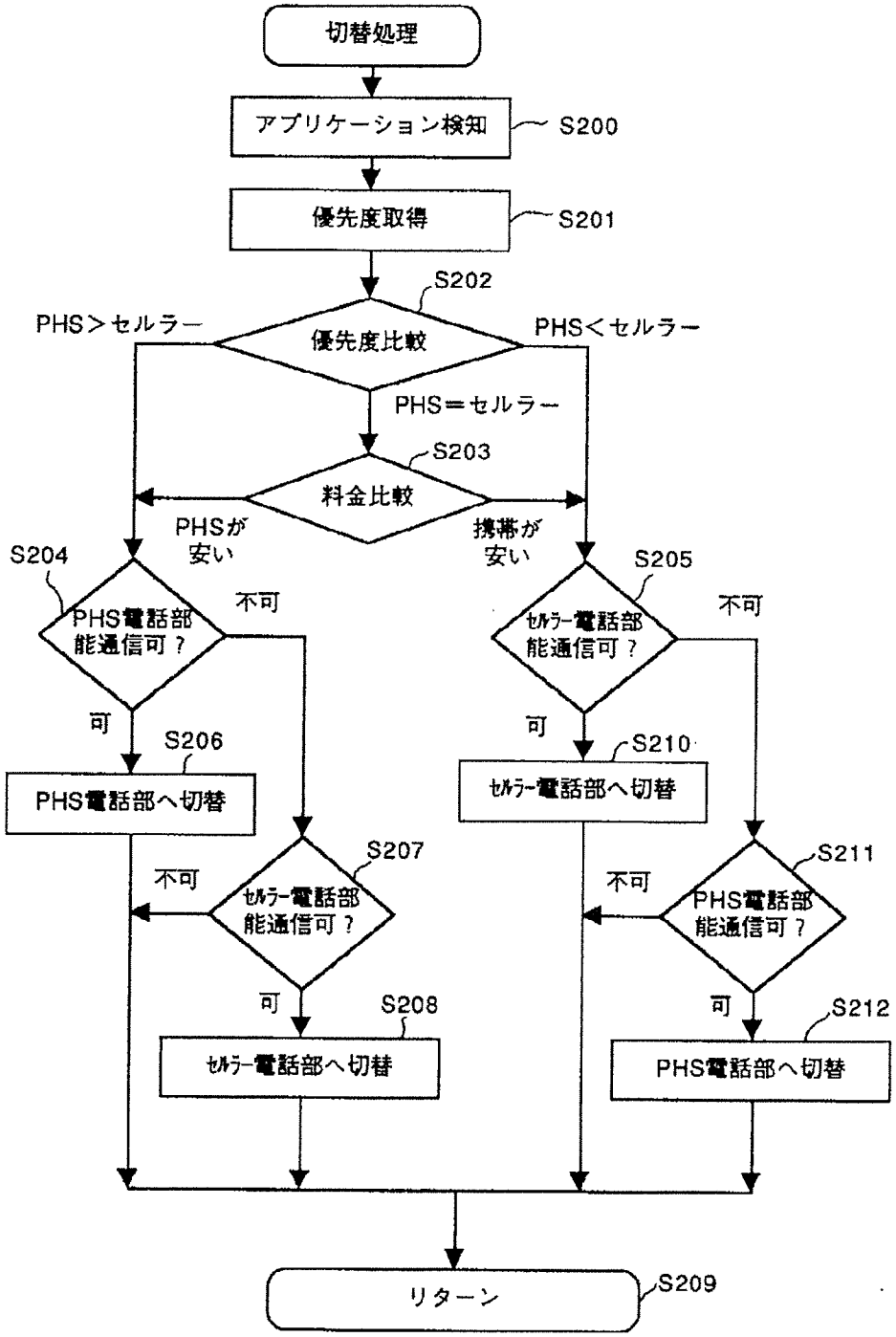
【図８】

	地域		810 セルラー電話機能	811 PHS電話機能
	発信	着信		
800	—	セルラー電話	X1	Y1
801	06	06	X2	Y2
802	03	06	X3	Y3
803	03	03	X4	Y4

【図５】


データ
処理手段
1
検知手段
2
3
切換手段
無線通信部
A
セルラー電話部
4
ＰＨＳ電話部
5
6
制御手段
S
検出手段
9
記憶手段
１０

【図６】


切替処理
アプリケーション検知
S200
優先度取得
S201
S202
優先度比較
PHS＞セルラー
PHS＜セルラー
PHS＝セルラー
S203
料金比較
PHSが安い
携帯が安い
S204
PHS電話部能通信可？
不可
可
S206
PHS電話部へ切替
S205
ｾﾙﾗｰ電話部能通信可？
不可
可
S210
ｾﾙﾗｰ電話部へ切替
S207
ｾﾙﾗｰ電話部能通信可？
不可
可
S208
ｾﾙﾗｰ電話部へ切替
S211
PHS電話部能通信可？
不可
可
S212
PHS電話部へ切替
リターン
S209

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H04M 15/16

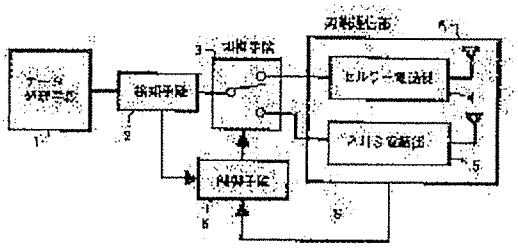
(21)Application number : 09-088522
(22)Date of filing : 07.04.1997

(71)Applicant : SANYO ELECTRIC CO LTD
(72)Inventor : NAKAJIMA HIROSHI

(30)Priority
Priority number : 09 78327 Priority date : 28.03.1997 Priority country : JP

(54) PORTABLE INFORMATION TERMINAL EQUIPMENT

(57)Abstract:
PROBLEM TO BE SOLVED: To facilitate an operation, to improve convenience and to reduce a communication charge by automatically switching a telephone function selected by an application software to be utilized and/or a charge.
SOLUTION: The output of a data processing means 1 is inputted and a detection means 2 detects the output data of which application software executed in the data processing means 1 it is. To a control means 6, priority information which is the output of the detection means 2 and signals S for indicating whether or not cellular telephone 4 and a PHS telephone part 5 are communicable from a radio communication part A are supplied. The control means 6 selects the communicable telephone part of high priority among the cellular telephone parts based on the priority information and the signals S and outputs switching signals. A switching means 3 is changeover-controlled corresponding to the switching signals from the control means 6. As a result, the data processed by the executed application software are selectively supplied to the cellular telephone part 4 or the PHS telephone part 5.



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(54)**Title of the Invention**Portable information terminal equipment
(51)**International Patent Classification (6th Edition)**

H04Q 7/38

H04M 11/00 303

15/16
FI

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15/16
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The number of claims 8
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Number of Pages9
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(32)**Priority date**Common 9 (1997) March 28
(33)**Country Declaring Priority**Japan (JP)
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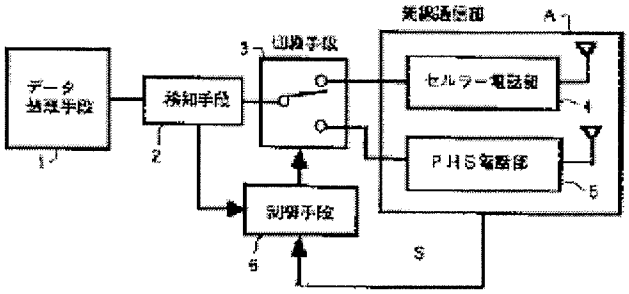
Address2-5-5, Keihan Hon-dori, Moriguchi-shi, Osaka Inside of SANYO Electric Co., Ltd.
(74)**Attorney**
Patent Attorney
NameYasutomi Koji (besides one person)

Abstract:
PROBLEM TO BE SOLVED: To facilitate an operation, to improve convenience and to reduce a communication charge by automatically switching a telephone function selected by an application software to be utilized and/or a charge. SOLUTION: The output of a data processing means 1 is inputted and a detection means 2 detects the output data of which application software executed in the data processing means 1 it is. To a control means 6, priority information which is the output of the detection means 2 and signals S for indicating whether or not cellular telephone 4 and a PHS telephone part 5 are communicable from a radio communication part A are supplied. The control means 6 selects the communicable telephone part of high priority among the cellular telephone parts based on the priority information and the signals S and outputs switching signals. A switching

means 3 is changeover-controlled corresponding to the switching signals from the control means 6. As a result, the data processed by the executed application software are selectively supplied to the cellular telephone part 4 or the PHS telephone part 5.



JPO Machine translation abstract:

(57) **Abstract**

SUBJECT In the portable information terminal equipment having two or more wireless communication means, since it was dependent on a user's judgment whether which wireless communication means is used in the former, the selection operation of the communication function was forced upon the user.

Means for Solution Application software performed by two or more wireless communication means, data processing means which performs two or more application software which performs respectively different processing, and a data processing means is detected, and priority information for every wireless communication means is generated. A control means generates a switching signal according to two or more communication propriety information and priority information of a wireless communication means, and, thereby, enables operation of one from two or more wireless communication means. A wireless communication function can be automatically changed from characteristic information of application performed, characteristic information of a wireless communication function, and information about telex rate gold.

Claim(s)

Claim 1 Portable information terminal equipment which makes available selectively either of said two or more wireless communication means with a priority determined based on contents which have two or more wireless communication means, and are transmitted and received using a fee and/or said wireless communication means.

Claim 2 Portable information terminal equipment comprising:

Two or more wireless communication means.

A data processing means which performs two or more application software which performs

respectively different processing.
A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless communication means, an output of said detection means and a control means which outputs a switching signal according to said communication propriety information, and a means for switching that enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 3 Portable information terminal equipment comprising:
Two or more wireless communication means.
A selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless communication means.
An output of said selected designation means, a control means which outputs a switching signal according to said communication propriety information, and a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 4 Portable information terminal equipment comprising:
Two or more wireless communication means.
An interface means for an entry of data.
A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless communication means, an output of said detection means and a control means which gives a switching signal according to said communication propriety information, and a means for switching that enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 5 Portable information terminal equipment comprising:
Two or more wireless communication means.
A data processing means which performs two or more application software which performs respectively different processing.
A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless communication means, and a detection means to generate information which shows a current position, A memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which outputs a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 6 Portable information terminal equipment comprising:
Two or more wireless communication means.
A selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless

communication means.
A detection means to generate information which shows a current position, and a memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which gives a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 7 Portable information terminal equipment comprising:
Two or more wireless communication means.
An interface means for input and output of data.
A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means.
A means to generate communication propriety information on said two or more wireless communication means, and a detection means to generate information which shows a current position, A memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be, A fee priority acquired from said memory measure by acquiring a fee priority based on an output and a message serial number of said detection means, an output of said detection means, and a control means which outputs a switching signal according to said communication propriety information, A means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

Claim 8 The portable information terminal equipment according to claim 4 or 7 a detection means' detecting type information different from data inputted via an interface means, and generating priority information of two or more wireless communication means.

Detailed Description of the Invention
0001
Field of the Invention This invention relates to portable information terminal equipment.
0002
Description of the Prior Art In recent years, various kinds of mobile phones, such as a cellular phone and PHS (Personal Handyphone System), have spread. then, **** which gives a user troublesomeness since these communication terminal devices need button grabbing in order to switch to a desired communication function although the communication terminal device in the many modes in which it has two or more communication functions including a pager etc. is considered -- when -- there was ********. . In order to solve this, when the function of a cordless telephone is operated by an initial state and it is able to communicate with a main phone with a terminal unit with both the functions of a cordless telephone and a cellular phone, operate a cordless telephone as it is. When it is not able to communicate, the art of raising convenience so that it may switch to the function of a cellular phone automatically and may be made operating is indicated by JP,4-351127,A.
0003
Problem(s) to be Solved by the Invention Although the cellular phone can communicate also in high speed movement and it has the merit that service areas are large, there is also a demerit that a utilization charge is expensive. On the other hand, although there is a merit of having turned to the future multimedia communication in which the utilization charge of PHS is cheap and the high-speed transmission of data is possible, also in a demerit, like it is narrow now, there are it being unable to use and service areas during high speed movement in the train. Thus, although various mobile phones have spread now, there is the respectively original feature in those functions and performances.
0004 However, in above-mentioned conventional technology, the change in which the original feature which various kinds of telephone services have was employed efficiently cannot be

performed easily, but the user's himself judgment is needed for performing these changes. This invention is made that the starting problem should be solved and can choose automatically the optimal phone system for the application software which a user uses. A scarce user does not need exceptional operation for the knowledge of a phone system or application software, either, but it aims at moreover aiming at reduction of communication charges.

0005

Means for Solving the Problem In order that portable information terminal equipment of this invention may solve an above-mentioned problem, it has two or more wireless communication means, A priority is determined based on contents transmitted and received using a fee and/or said wireless communication means, and either of said two or more wireless communication means is made available with this priority.

0006 Two or more wireless communication means and a data processing means which performs two or more application software which performs respectively different processing, A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0007 Two or more wireless communication means and a selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said selected designation means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0008 Two or more wireless communication means and an interface means for an entry of data, A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which gives a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0009A detection means to generate information which shows a current position further to these inventions, and a memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be are established, A control means outputs a switching signal according to an output and said communication propriety information on a fee priority acquired from said memory measure by acquiring a fee priority, said detection means, or a selected designation means based on an output and a message serial number of a detection means.

0010A detection means detects type information with another data inputted via an interface means, and generates priority information of two or more wireless communication means.

0011

Embodiment of the Invention Drawing 1 is a block diagram showing the portable information terminal equipment concerning this invention. The Radio Communications Department A consists of the cellular phone part 4 and the PHS telephone section 5. The cellular phone part 4 has a communication function of a cellular phone, and the PHS telephone section 5 has a communication function of a PHS telephone. The application software for performing processing of access to a voice call, personal computer communications, a file transfer, a TV phone, and the Internet, etc. can be memorized, and the data processing means 1 can be, can perform those applications, and can output data.

0012 The output of a data processing means is inputted and the detection means 2 detects of which application software performed by the data processing means it is output data. For example,

when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. Furthermore, the detection means 2 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, It is made as **acquire / from this table / the priority information corresponding to the application software performed by the data processing means 1** . For example, when carrying out a file transfer, even when the access speed of a file transfer is high-speed, also at a low speed, it is possible, but. Since hour corresponding will become short and communication cost will also end at a low price if high-speed transmission is used, the priority No. 1 of the PHS telephone function in which high-speed transmission is possible is set up highly, and the priority of a cellular phone function is set as the following ranking. It seems that the priority No. 1 of a PHS telephone function is matched highly, and the priority of a cellular phone function serves as zero when it is a thing connectable only with ISDN by multimedia communication.

0013 The signal S which shows whether the cellular phone 4 and the PHS telephone section 5 can communicate from the priority information which is an output of the detection means 2, and the Radio Communications Department A is supplied to the control means 6. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone section based on priority information and the signal S, and the control means 6 outputs a switching signal. According to the switching signal from the control means 6, switching control of the means for switching 3 is carried out. As a result, the data processed with the performed application software is selectively supplied to the cellular phone part 4 or the PHS telephone section 5.

0014 Drawing 2 shows the example in the case of carrying out selected designation of the application software which a user performs. The user can carry out by choosing the application software which can carry out selected designation, for example, is performed with pointing devices, such as a pen, by carrying out the direct entry of the application software performed for the selected designation means 7. The selected designation means 7 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, and is made as **acquire / from this table / the priority information corresponding to the application software by which selected designation was carried out** . The selected designation means 7 supplies the priority information acquired by doing in this way to the control means 6. Direct supply of the output of the data processing means 1 is carried out to the means for switching 3.

0015 Drawing 3 and drawing 4 show the example in at the time of connecting the portable information terminal equipment concerning this invention to a personal computer etc. The interface 8 is formed in order to make connection possible. By the case where the output data of a personal computer is supplied to the interface means 8, drawing 3 distinguishes the application software performed from input data. For example, when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. The detection means 2 outputs the priority for every **corresponding to the application software of the voice call** telephone function based on this type information. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal.

0016 In drawing 4, it is a case where data and type information are supplied to the interface means 8 as an output from a personal computer etc. This type information shows what the performed application software is, and also when supplied with the data supplied besides in the case of being supplied separately from the data supplied to the interface means 8, it is included. The case where it is both supplied is a case where type information is included in the header in case the data supplied, for example has a header. The detection means 2 grasps what the application software performed based on this type information is, and outputs the priority information for every **corresponding to that application software** telephone function. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal to the means for switching 3.

0017 Here, depending on the application software performed, any of a PHS telephone section and a cellular phone part are sufficient, and the priority of both wireless communication means becomes

the same in this case. For example, since a PHS telephone section or any of a cellular phone part may be sufficient when the application performed is a voice call, the same priority will be set up. In this case, while detecting the present position information on portable information terminal equipment, a mail arrival partner's position information is detected from a message serial number, the table of the information about the fee beforehand registered based on the currency information of portable information terminal equipment and a mail arrival partner's position information is searched, and telex rate gold is compared. And priority can be given from the cheap thing of phonecall charges, and ranking can be determined.

0018 Drawing 5 is a block diagram showing the example which enabled the change of the cellular phone part 4 by the size of these phonecall charges, and the PHS telephone section 5. The detection means 9 is a means to detect the current position of a personal digital assistant device. Detection of a current position as indicated by the publication of patent applications (JP,6-120876,A), A burst signal including the base station identification information and the directive information which are transmitted while a base transceiver station changes directivity with portable information terminal equipment is received, and the position of portable information terminal equipment is detected based on received field intensity information. The electric wave transmitted from four or more satellites may be received, and GSP (Global Positioning System: global positioning system) which measures the position of portable information terminal equipment may detect. Since a message serial number is obtained when a user does the depression of the dial button of the Radio Communications Department, it supplies this to the control means 6. Or when the message serial number is contained in the data processing means 1, this is detected by the detection means 2 and it may be made to supply the control means 6. In this case, if it is made for a data processing means to output the header which can identify a telephone number apart from send data, the detection means can recognize a message serial number by recognizing this header.

0019 The memory measure 10 memorizes the table of telex rate gold according to mail arrival area from the dispatch area of a PHS telephone or each cellular phone. The table of this telex rate gold enables it to correspond, when it memorizes to ROM at the time of shipment and a fee is reformed in the future only by exchanging this ROM. When the information about a fee is distributed via a base station from a communication enterprise, a memory rewritable to a Personal Digital Assistant device is provided, and this information can be memorized. Furthermore, storages, such as an IC card, can also be used. The control means 6 chooses the optimal telephone section of the wireless communication means A from the priority information acquired from the detection means 2, the priority of phonecall charges, and the signal S acquired from the Radio Communications Department A, and outputs a switching signal to the means for switching 3. Selection of the optimal telephone section is later mentioned based on drawing 6.

0020 The priority of phonecall charges judges dispatch area from the current position of the portable information terminal equipment detected by the detection means 9, judges mail arrival area from a message serial number, and is determined here by comparing telex rate gold for every telephone function from the table of the telex rate gold memorized by the memory measure 10.

0021 Drawing 6 is a flow chart showing the outline of change processing of this invention. It is detected by the detection means 2 what the performed application software is (S200). The priority corresponding to the detected application software is acquired from the table of the application software and the telephone function which are shown in drawing 7 (S201). For example, when a voice call is detected as application, the priority "1" of the column of the sequence 710 of a cellular phone function is acquired in the line 702 of the voice call of drawing 7. It turns out that a priority in case this chooses a cellular phone function with the application of a voice call is "1." The priority in the case of choosing a PHS telephone function similarly "1" (702 lines, 712 rows) will be acquired.

0022 Next, comparison of the priority of a cellular phone function and a PHS telephone function is performed (S202). for example, the priority of a cellular phone function when a file transfer is detected as performed application software -- drawing 7 -- "2" -- similarly, the priority of a PHS telephone function is set to "1", and a priority will be higher for the PHS telephone function. When a voice call is detected as performed application software, the priority of a PHS telephone function is set to "1" by "1", and the priority of a cellular phone function will have a the same priority.

0023 When the priority of a PHS telephone function is the same as the priority of a cellular phone

function, the fee for every means of communication is compared (S203). Fee comparison is detected from the information which shows of which cell that received the present position information on portable information terminal equipment from the base station it is a base station, A mail arrival partner's position information is detected from an origination telephone number, and telex rate gold is compared from the table shown in drawing 8 beforehand registered based on the currency information of a portable remote terminal device, and a mail arrival partner's position information. For example, when a mail arrival partner's telephone number is a "cellular phone." Regardless of a place-of-dispatch region, the line 800 of mail arrival "cellular phone" is chosen from drawing 8, and the fee "X1" (column of the line 800 and the sequence 810) of a cellular phone function and the fee "Y1" (column of the line 800 and the sequence 811) of a PHS telephone function are acquired. When a mail arrival partner's telephone numbers are "06" area, the current position of the portable information terminal equipment to send in "06" area, The line 801 of dispatch "06" of drawing 8 and arrival "06" is chosen, and the fee "X2" (column of the line 801 and the sequence 810) of a cellular phone function and the fee "Y2" (column of the line 801 and the sequence 811) of a PHS telephone function are acquired. And comparison of "X2" and "Y2" is made, if it is "X2>Y2", a PHS telephone function will be chosen, and if it is "X2<Y2", a cellular phone function will be chosen.

0024 When the priority of a PHS telephone function is higher than the priority of a cellular phone function, or when a priority is the same and a PHS telephone function is chosen as a result of an above-mentioned fee comparison, judgment whether the PHS telephone section 5 can communicate is made (S204). Judgment of the communication propriety of the PHS telephone section 5 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed to the PHS telephone section 5 (S206) and it is judged that communication is impossible, judgment of the propriety which can talk the cellular phone part 4 over the telephone is made. Judgment whether the propriety judgment which can communicate the cellular phone part 4 is suitable for communication according **the performed application software** to a cellular phone function, and judgment whether communication by a cellular phone part is possible are made (S207). For example, from drawing 7, the priority of a cellular phone function when what uses ISDN as performed application is detected is set to "0" (705 lines, 710 rows), and expresses communication impossible. In this case, a change in a cellular phone part is not performed, but a spawn process is ended (S209). On the other hand, when it is judged that the telephone call of the cellular phone part 5 is possible, when possible, a change is performed for the signal S of whether communication with the base station which a priority is "1" or "2", and is notified from the cellular phone part 4 is possible in the cellular phone part 5 (S208).

0025 When the priority of a cellular phone function is higher than the priority of a PHS telephone function, or when a priority is the same and a cellular phone function is chosen as a result of an above-mentioned fee comparison, it is judged whether the cellular phone part 4 can communicate (S205). Judgment of the communication propriety of the cellular phone part 4 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed in the cellular phone part 4 (S210) and it is judged that communication is impossible, judgment of the propriety which can talk the PHS telephone section 5 over the telephone is made. The propriety judgment which can communicate the PHS telephone section 5 is made by judgment whether the performed application software is suitable for communication by a PHS telephone function, and judgment whether communication by the PHS telephone section 5 is possible (S211). The performed application software is suitable for communication by a PHS telephone function, and when it can communicate, a change is performed to the PHS telephone section 5 (S212), when that is not right, it does not switch to the PHS telephone section 5, but processing is ended (S209). In an example, although the cellular phone function and the PHS telephone function were explained, this invention is not limited to these.

0026

Effect of the Invention In this invention, since the telephone function which should be chosen by the application software and/or the fee to be used is changed automatically, operation becomes easy and improvement in convenience and reduction of telex rate gold can be aimed at. Since the telephone function which should be chosen by the application software to be used is switched automatically, it has an effect which can communicate by a means of communication suitable for

the application software which a scarce person also uses for the knowledge of the communication condition of a telephone function. Since it switches to a telephone section with cheaper communication cost automatically based on the information about a fee, reduction of communication cost has an effect.

Field of the Invention This invention relates to portable information terminal equipment.

Description of the Prior Art In recent years, various kinds of mobile phones, such as a cellular phone and PHS (Personal Handyphone System), have spread. then, **** which gives a user troublesomeness since these communication terminal devices need button grabbing in order to switch to a desired communication function although the communication terminal device in the many modes in which it has two or more communication functions including a pager etc. is considered -- when -- there was ********. . In order to solve this, when the function of a cordless telephone is operated by an initial state and it is able to communicate with a main phone with a terminal unit with both the functions of a cordless telephone and a cellular phone, operate a cordless telephone as it is. When it is not able to communicate, the art of raising convenience so that it may switch to the function of a cellular phone automatically and may be made operating is indicated by JP,4-351127,A.

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Problem(s) to be Solved by the Invention Although the cellular phone can communicate also in high speed movement and it has the merit that service areas are large, there is also a demerit that a utilization charge is expensive. On the other hand, although there is a merit of having turned to the future multimedia communication in which the utilization charge of PHS is cheap and the high-speed transmission of data is possible, also in a demerit, like it is narrow now, there are it being unable to use and service areas during high speed movement in the train. Thus, although various mobile phones have spread now, there is the respectively original feature in those functions and performances.

0004 However, in above-mentioned conventional technology, the change in which the original feature which various kinds of telephone services have was employed efficiently cannot be performed easily, but the user's himself judgment is needed for performing these changes. This invention is made that the starting problem should be solved and can choose automatically the optimal phone system for the application software which a user uses. A scarce user does not need exceptional operation for the knowledge of a phone system or application software, either, but it aims at moreover aiming at reduction of communication charges.

Means for Solving the Problem In order that portable information terminal equipment of this

invention may solve an above-mentioned problem, it has two or more wireless communication means, A priority is determined based on contents transmitted and received using a fee and/or said wireless communication means, and either of said two or more wireless communication means is made available with this priority.

0006 Two or more wireless communication means and a data processing means which performs two or more application software which performs respectively different processing, A detection means to detect application software performed based on information received from a data processing means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0007 Two or more wireless communication means and a selected designation means to make possible selected designation of application software performed to a user, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said selected designation means and a control means which outputs a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0008 Two or more wireless communication means and an interface means for an entry of data, A detection means to detect data inputted via said interface means, and to generate priority information of two or more of said wireless communication means, A means to generate communication propriety information on said two or more wireless communication means, and an output of said detection means and a control means which gives a switching signal according to said communication propriety information, It had a means for switching which enables operation of one wireless communication means from said two or more wireless communication means according to an output of said control means.

0009A detection means to generate information which shows a current position further to these inventions, and a memory measure information about a fee for every wireless communication means matched with a place-of-dispatch region and a mail arrival area was remembered to be are established, A control means outputs a switching signal according to an output and said communication propriety information on a fee priority acquired from said memory measure by acquiring a fee priority, said detection means, or a selected designation means based on an output and a message serial number of a detection means.

0010A detection means detects type information with another data inputted via an interface means, and generates priority information of two or more wireless communication means.

0011

Embodiment of the Invention Drawing 1 is a block diagram showing the portable information terminal equipment concerning this invention. The Radio Communications Department A consists of the cellular phone part 4 and the PHS telephone section 5. The cellular phone part 4 has a communication function of a cellular phone, and the PHS telephone section 5 has a communication function of a PHS telephone. The application software for performing processing of access to a voice call, personal computer communications, a file transfer, a TV phone, and the Internet, etc. can be memorized, and the data processing means 1 can be, can perform those applications, and can output data.

0012 The output of a data processing means is inputted and the detection means 2 detects of which application software performed by the data processing means it is output data. For example, when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. Furthermore, the detection means 2 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, It is made as **acquire / from this table / the priority information corresponding to the application software performed by the data processing means 1** . For example, when carrying out a file transfer, even when the access speed of a file transfer is high-speed, also at a low speed, it is possible, but. Since hour corresponding will

become short and communication cost will also end at a low price if high-speed transmission is used, the priority No. 1 of the PHS telephone function in which high-speed transmission is possible is set up highly, and the priority of a cellular phone function is set as the following ranking. It seems that the priority No. 1 of a PHS telephone function is matched highly, and the priority of a cellular phone function serves as zero when it is a thing connectable only with ISDN by multimedia communication.

0013 The signal S which shows whether the cellular phone 4 and the PHS telephone section 5 can communicate from the priority information which is an output of the detection means 2, and the Radio Communications Department A is supplied to the control means 6. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone section based on priority information and the signal S, and the control means 6 outputs a switching signal. According to the switching signal from the control means 6, switching control of the means for switching 3 is carried out. As a result, the data processed with the performed application software is selectively supplied to the cellular phone part 4 or the PHS telephone section 5.

0014 Drawing 2 shows the example in the case of carrying out selected designation of the application software which a user performs. The user can carry out by choosing the application software which can carry out selected designation, for example, is performed with pointing devices, such as a pen, by carrying out the direct entry of the application software performed for the selected designation means 7. The selected designation means 7 is provided with the table which attached the priority for every cellular phone function corresponding to application software, and PHS telephone function, and is made as **acquire / from this table / the priority information corresponding to the application software by which selected designation was carried out** . The selected designation means 7 supplies the priority information acquired by doing in this way to the control means 6. Direct supply of the output of the data processing means 1 is carried out to the means for switching 3.

0015 Drawing 3 and drawing 4 show the example in at the time of connecting the portable information terminal equipment concerning this invention to a personal computer etc. The interface 8 is formed in order to make connection possible. By the case where the output data of a personal computer is supplied to the interface means 8, drawing 3 distinguishes the application software performed from input data. For example, when input data is analyzed and it can be judged as speech information, it can detect that the performed application software is a voice call. The detection means 2 outputs the priority for every **corresponding to the application software of the voice call** telephone function based on this type information. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal.

0016 In drawing 4, it is a case where data and type information are supplied to the interface means 8 as an output from a personal computer etc. This type information shows what the performed application software is, and also when supplied with the data supplied besides in the case of being supplied separately from the data supplied to the interface means 8, it is included. The case where it is both supplied is a case where type information is included in the header in case the data supplied, for example has a header. The detection means 2 grasps what the application software performed based on this type information is, and outputs the priority information for every **corresponding to that application software** telephone function. A priority chooses the telephone section which can be high and can communicate among a cellular phone part and a PHS telephone based on priority information and the signal S, and the control means 6 outputs a switching signal to the means for switching 3.

0017 Here, depending on the application software performed, any of a PHS telephone section and a cellular phone part are sufficient, and the priority of both wireless communication means becomes the same in this case. For example, since a PHS telephone section or any of a cellular phone part may be sufficient when the application performed is a voice call, the same priority will be set up. In this case, while detecting the present position information on portable information terminal equipment, a mail arrival partner's position information is detected from a message serial number, the table of the information about the fee beforehand registered based on the currency information of portable information terminal equipment and a mail arrival partner's position information is searched, and telex rate gold is compared. And priority can be given from the cheap thing of

phonecall charges, and ranking can be determined.
0018 Drawing 5 is a block diagram showing the example which enabled the change of the cellular phone part 4 by the size of these phonecall charges, and the PHS telephone section 5. The detection means 9 is a means to detect the current position of a personal digital assistant device. Detection of a current position as indicated by the publication of patent applications (JP,6-120876,A), A burst signal including the base station identification information and the directive information which are transmitted while a base transceiver station changes directivity with portable information terminal equipment is received, and the position of portable information terminal equipment is detected based on received field intensity information. The electric wave transmitted from four or more satellites may be received, and GSP (Global Positioning System: global positioning system) which measures the position of portable information terminal equipment may detect. Since a message serial number is obtained when a user does the depression of the dial button of the Radio Communications Department, it supplies this to the control means 6. Or when the message serial number is contained in the data processing means 1, this is detected by the detection means 2 and it may be made to supply the control means 6. In this case, if it is made for a data processing means to output the header which can identify a telephone number apart from send data, the detection means can recognize a message serial number by recognizing this header.

0019 The memory measure 10 memorizes the table of telex rate gold according to mail arrival area from the dispatch area of a PHS telephone or each cellular phone. The table of this telex rate gold enables it to correspond, when it memorizes to ROM at the time of shipment and a fee is reformed in the future only by exchanging this ROM. When the information about a fee is distributed via a base station from a communication enterprise, a memory rewritable to a Personal Digital Assistant device is provided, and this information can be memorized. Furthermore, storages, such as an IC card, can also be used. The control means 6 chooses the optimal telephone section of the wireless communication means A from the priority information acquired from the detection means 2, the priority of phonecall charges, and the signal S acquired from the Radio Communications Department A, and outputs a switching signal to the means for switching 3. Selection of the optimal telephone section is later mentioned based on drawing 6.
0020 The priority of phonecall charges judges dispatch area from the current position of the portable information terminal equipment detected by the detection means 9, judges mail arrival area from a message serial number, and is determined here by comparing telex rate gold for every telephone function from the table of the telex rate gold memorized by the memory measure 10.
0021 Drawing 6 is a flow chart showing the outline of change processing of this invention. It is detected by the detection means 2 what the performed application software is (S200). The priority corresponding to the detected application software is acquired from the table of the application software and the telephone function which are shown in drawing 7 (S201). For example, when a voice call is detected as application, the priority "1" of the column of the sequence 710 of a cellular phone function is acquired in the line 702 of the voice call of drawing 7. It turns out that a priority in case this chooses a cellular phone function with the application of a voice call is "1." The priority in the case of choosing a PHS telephone function similarly "1" (702 lines, 712 rows) will be acquired.
0022 Next, comparison of the priority of a cellular phone function and a PHS telephone function is performed (S202). for example, the priority of a cellular phone function when a file transfer is detected as performed application software -- drawing 7 -- "2" -- similarly, the priority of a PHS telephone function is set to "1", and a priority will be higher for the PHS telephone function. When a voice call is detected as performed application software, the priority of a PHS telephone function is set to "1" by "1", and the priority of a cellular phone function will have a the same priority.
0023 When the priority of a PHS telephone function is the same as the priority of a cellular phone function, the fee for every means of communication is compared (S203). Fee comparison is detected from the information which shows of which cell that received the present position information on portable information terminal equipment from the base station it is a base station, A mail arrival partner's position information is detected from an origination telephone number, and telex rate gold is compared from the table shown in drawing 8 beforehand registered based on the currency information of a portable remote terminal device, and a mail arrival partner's position information. For example, when a mail arrival partner's telephone number is a "cellular phone."

Regardless of a place-of-dispatch region, the line 800 of mail arrival "cellular phone" is chosen from drawing 8, and the fee "X1" (column of the line 800 and the sequence 810) of a cellular phone function and the fee "Y1" (column of the line 800 and the sequence 811) of a PHS telephone function are acquired. When a mail arrival partner's telephone numbers are "06" area, the current position of the portable information terminal equipment to send in "06" area, The line 801 of dispatch "06" of drawing 8 and arrival "06" is chosen, and the fee "X2" (column of the line 801 and the sequence 810) of a cellular phone function and the fee "Y2" (column of the line 801 and the sequence 811) of a PHS telephone function are acquired. And comparison of "X2" and "Y2" is made, if it is "X2>Y2", a PHS telephone function will be chosen, and if it is "X2<Y2", a cellular phone function will be chosen.

0024 When the priority of a PHS telephone function is higher than the priority of a cellular phone function, or when a priority is the same and a PHS telephone function is chosen as a result of an above-mentioned fee comparison, judgment whether the PHS telephone section 5 can communicate is made (S204). Judgment of the communication propriety of the PHS telephone section 5 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed to the PHS telephone section 5 (S206) and it is judged that communication is impossible, judgment of the propriety which can talk the cellular phone part 4 over the telephone is made. Judgment whether the propriety judgment which can communicate the cellular phone part 4 is suitable for communication according **the performed application software** to a cellular phone function, and judgment whether communication by a cellular phone part is possible are made (S207). For example, from drawing 7, the priority of a cellular phone function when what uses ISDN as performed application is detected is set to "0" (705 lines, 710 rows), and expresses communication impossible. In this case, a change in a cellular phone part is not performed, but a spawn process is ended (S209). On the other hand, when it is judged that the telephone call of the cellular phone part 5 is possible, when possible, a change is performed for the signal S of whether communication with the base station which a priority is "1" or "2", and is notified from the cellular phone part 4 is possible in the cellular phone part 5 (S208).

0025 When the priority of a cellular phone function is higher than the priority of a PHS telephone function, or when a priority is the same and a cellular phone function is chosen as a result of an above-mentioned fee comparison, it is judged whether the cellular phone part 4 can communicate (S205). Judgment of the communication propriety of the cellular phone part 4 is made by the signal S acquired from the Radio Communications Department A. When communication was possible as a result, a change is performed in the cellular phone part 4 (S210) and it is judged that communication is impossible, judgment of the propriety which can talk the PHS telephone section 5 over the telephone is made. The propriety judgment which can communicate the PHS telephone section 5 is made by judgment whether the performed application software is suitable for communication by a PHS telephone function, and judgment whether communication by the PHS telephone section 5 is possible (S211). The performed application software is suitable for communication by a PHS telephone function, and when it can communicate, a change is performed to the PHS telephone section 5 (S212), when that is not right, it does not switch to the PHS telephone section 5, but processing is ended (S209). In an example, although the cellular phone function and the PHS telephone function were explained, this invention is not limited to these.

Brief Description of the Drawings

Drawing 1 The functional block diagram concerning this invention

Drawing 2 Other functional block diagrams concerning this invention

Drawing 3 Other functional block diagrams concerning this invention

Drawing 4 Other functional block diagrams concerning this invention

Drawing 5 Other functional block diagrams concerning this invention

Drawing 6 The flow chart figure showing the processing in the example of this invention

Drawing 7 The figure showing correspondence of the application software in the example of this invention, and a priority

Drawing 8 The figure showing the fee according to telephone function in the example of this

invention

Description of Notations

1 Application means
2 Detection means
3 Means for switching
4 Cellular phone part
5 PHS telephone section
6 Control means
7 Selected designation means
8 Interface
9 Detection means
10 Memory measure

Drawing 1

For drawings please refer to the original document.

Drawing 2

For drawings please refer to the original document.

Drawing 3

For drawings please refer to the original document.

Drawing 4

For drawings please refer to the original document.

Drawing 7

For drawings please refer to the original document.

Drawing 8

For drawings please refer to the original document.

Drawing 5

For drawings please refer to the original document.

Drawing 6

For drawings please refer to the original document.

For drawings please refer to the original document.